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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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Hiroyuki Saito

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EXAMINER

AHMED, SALMAN

ART UNIT

PAPER NUMBER

2616

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Please find below and/or attached an Office communication concerning this application or proceeding.

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Office Action Summary	Application No. 09/924,054	Applicant(s) SAITO, HIROYUKI	
	Examiner Salman Ahmed	Art Unit 2616	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 9/27/2006 (RCE).
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 19-27 is/are pending in the application.
4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 19,21,22,24,25 and 27 is/are rejected.
- 7) ☒ Claim(s) 20,23 and 26 is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 8/10/2001 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
a) ☒ All b) ☐ Some * c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08)
Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

Claims 19-27 are pending.

Claims 1-18 have been cancelled by the Applicant.

Claims 19, 21, 22, 24, 25 and 27 are rejected.

Claims 20, 23 and 26 are objected to.

Claim Rejections - 35 USC § 102

1. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

2. Claims 19, 21, 22, 24, 25 and 27 are rejected under 35 U.S.C. 102(e) as being anticipated by Benmohmed et al. (US PAT 6795399, hereinafter Benmohamed).

In regards to claim 19, Benmohamed anticipates a system (Fig 1) for identifying a path for a multiple point communication service (abstract and column 1 line 65-66, apparatus for designing IP networks with substantially improved performance) within a network that includes a plurality of ingress nodes and a plurality of egress nodes and a plurality of links connecting to the ingress nodes and the egress nodes (column 4 lines 26-28, set of nodes corresponding to the points of presence (POPs where routers are located) and E is the set of links which can be used to provide direct connectivity

between the POPs), the system comprising: means for setting an objective function for minimizing a link load in the network (abstract: Methods and apparatus are provided for designing IP networks with substantially improved performance as compared to existing IP networks such as, for example, those networks designed under best-effort criteria. Particularly, the invention includes methods and apparatus for: computing worst-case and optimistic link capacity requirements; optimizing network topology; and determining router placement within a network); means for setting a first constraint expression for deriving the link load (constraint minimum link capacity c , F1FO ref. by col. 7 lines 25-35 and column 13 lines 16-21, depending on the option chosen by the user, the worst-case link capacity requirements are computed. That is, the link capacity for each link in the current network topology is computed based on the demands, the delay, the scheduling/buffering scheme and congestion option selected); means for generating a second constraint expression for selecting a route for data traffic received by the ingress nodes (IP flow demand f ; which has a route based on source s and destination t wherein the constraint is the share of link capacity ref. by col. 4 lines 21-48, col. 6 lines 34-55); means for generating a third constraint expression for calculating a link band for the links based on the data traffic received by the ingress nodes (Steps 402-404 of FIG. 4, user-selected congestion scenario and worst-case link capacity requirements Step 402 for generating constraints to compute the bandwidth of Optimistic Link Capacity Step 404 for each link l inclusive of incoming node traffic ref. by col. 13 lines 29-56); means for generating a fourth constraint expression to assure that a link capacity limit associated with the links is not exceeded (limits of upper and lower

bounds of capacities as a function as shown in equations (17)-(20) ref. by col. 12 lines 7-24); and means for identifying a path for the multiple point communication service based on the objective function and the first, second, third, and fourth constraint expressions (column 5 lines 29-30, The results of the final design are output (step 210), e.g., in the form of information displayed to the user of the design system, including: (1) the vector C ; (2) the route of each traffic flow $f_{sub.i}$; and (3) the corresponding network cost).

In regards to claim 22, Benmohamed anticipates a method for identifying a path for a multiple point communication service (abstract and column 1 line 65-66, apparatus for designing IP networks with substantially improved performance) within a network that includes a plurality of ingress nodes and a plurality of egress nodes and a plurality of links connecting to the ingress nodes and the egress nodes (column 4 lines 26-28, set of nodes corresponding to the points of presence (POPs where routers are located) and E is the set of links which can be used to provide direct connectivity between the POPs), the system comprising: setting an objective function for minimizing a link load in the network (abstract: Methods and apparatus are provided for designing IP networks with substantially improved performance as compared to existing IP networks such as, for example, those networks designed under best-effort criteria. Particularly, the invention includes methods and apparatus for: computing worst-case and optimistic link capacity requirements; optimizing network topology; and determining router placement within a network); setting a first constraint expression for deriving the link load (constraint minimum link capacity c_{F1FO} ref. by col. 7 lines 25-35 and column 13 lines

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16-21, depending on the option chosen by the user, the worst-case link capacity requirements are computed. That is, the link capacity for each link in the current network topology is computed based on the demands, the delay, the scheduling/buffering scheme and congestion option selected); generating a second constraint expression for selecting a route for data traffic received by the ingress nodes (IP flow demand f ; which has a route based on source s and destination t wherein the constraint is the share of link capacity ref. by col. 4 lines 21-48, col. 6 lines 34-55); generating a third constraint expression for calculating a link band for the links based on the data traffic received by the ingress nodes (Steps 402-404 of FIG. 4, user-selected congestion scenario and worst-case link capacity requirements Step 402 for generating constraints to compute the bandwidth of Optimistic Link Capacity Step 404 for each link l inclusive of incoming node traffic ref. by col. 13 lines 29-56); generating a fourth constraint expression to assure that a link capacity limit associated with the links is not exceeded (limits of upper and lower bounds of capacities as a function as shown in equations (17)-(20) ref. by col. 12 lines 7-24); and identifying a path for the multiple point communication service based on the objective function and the first, second, third, and fourth constraint expressions (column 5 lines 29-30, The results of the final design are output (step 210), e.g., in the form of information displayed to the user of the design system, including: (1) the vector C ; (2) the route of each traffic flow $f_{sub.i}$; and (3) the corresponding network cost).

In regards to claim 25, Benmohamed anticipates a system (Fig 1) for identifying a path for a multiple point communication service (abstract and column 1 line 65-66,

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apparatus for designing IP networks with substantially improved performance) within a network that includes a plurality of ingress nodes and a plurality of egress nodes and a plurality of links connecting to the ingress nodes and the egress nodes (column 4 lines 26-28, set of nodes corresponding to the points of presence (POPs where routers are located) and E is the set of links which can be used to provide direct connectivity between the POPs), the system comprising: an optimization reference generator (figure 1, IP network design system 10) to: set an objective function for minimizing a link load in the network (abstract: Methods and apparatus are provided for designing IP networks with substantially improved performance as compared to existing IP networks such as, for example, those networks designed under best-effort criteria. Particularly, the invention includes methods and apparatus for: computing worst-case and optimistic link capacity requirements; optimizing network topology; and determining router placement within a network), and set a first constraint expression for deriving the link load (constraint minimum link capacity c_{F1FO} ref. by col. 7 lines 25-35 and column 13 lines 16-21, depending on the option chosen by the user, the worst-case link capacity requirements are computed. That is, the link capacity for each link in the current network topology is computed based on the demands, the delay, the scheduling/buffering scheme and congestion option selected); a route selecting condition generator (figure 1, a network topology optimization processor 18) to generate a second constraint expression for selecting a route for data traffic received by the ingress nodes (IP flow demand f ; which has a route based on source s and destination t wherein the constraint is the share of link capacity ref. by col. 4 lines 21-48, col. 6 lines

34-55); a link capacity calculating condition generator (figure 1, worst-case link capacity requirements processor 14) to generate a third constraint expression for calculating a link band for the links based on the data traffic received by the ingress nodes (Steps 402-404 of FIG. 4, user-selected congestion scenario and worst-case link capacity requirements Step 402 for generating constraints to compute the bandwidth of Optimistic Link Capacity Step 404 for each link l inclusive of incoming node traffic ref. by col. 13 lines 29-56); a link including condition generator (Figure 1, optimistic link capacity design processor 16) to generate a fourth constraint expression to assure that a link capacity limit associated with the links is not exceeded (limits of upper and lower bounds of capacities as a function as shown in equations (17)-(20) ref. by col. 12 lines 7-24); and an optimizer (figure 1, a router replacement processor 20) to identify a path for the multiple point communication service based on the objective function and the first, second, third, and fourth constraint expressions (column 5 lines 29-30, The results of the final design are output (step 210), e.g., in the form of information displayed to the user of the design system, including: (1) the vector C ; (2) the route of each traffic flow $f_{sub.i}$; and (3) the corresponding network cost).

In regards to claims 21, 24 and 27, Benmohamed anticipates input data rates are associated with the ingress nodes and output data rates are associated with the egress nodes, the multiple point communication service permitting an arbitrary data rate within a range based on the input data rates and the output data rates (column 2 lines 5-20, column 8 lines 51-67, Particularly, upper and lower link capacity bounds are computable to provide the user of the design methodology with worst-case and optimistic results as

a function of various design parameters. That is, given a network topology, specific IP demands and network delays, the design methodology of the invention permits a user to compute link capacity requirements for various network congestion scenarios, e.g., network-wide multiple bottleneck events, for each link of the given network. The difference between $r_{sub.i.sup.l}$ and the minimum share of demand i at all the other links in its path (which is greater than $d_{sub.i}$ since $r_{sub.i.sup.l} \geq d_{sub.i}$ at all links in $p(i)$) can be deducted from $c_{sub.l.sup.FIFO}$ without violating the demands, otherwise this extra capacity may be captured by other greedy demands traversing link l which already have their requirements met. In this sense, we consider $c_{sub.l.sup.FIFO}$ in equation (5) as an upper bound on the required link capacity and denote it by $c_{sub.l.sup.FIFO}$, where we emphasize the dependence of the weights $w_{sub.j}$, and consequently of $c_{sub.l.sup.FIFO}$, on the value of $H_{sub.l}$. Also, by taking into account the multiple bottleneck effect mentioned above we obtain a lower bound $c_{sub.l.sup.FIFO}$ on the required link capacity. The value of $r_{sub.i} \geq d_{sub.i}$ could be set to some value that represents any potential limitation due for instance to the speed of the VPN's access link to the network).

Allowable Subject Matter

3. Claims 20, 23 and 26 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

Response to Arguments

4. Applicant's arguments see pages 7-11 of the Remarks section, filed 8/31/2006, with respect to the objection to the specification have been fully considered. Examiner respectfully submits that the addition of new claims 19-27 renders any response to the arguments moot due to the new grounds of rejections presented in this office action.

5. Relevant art pertinent to the application but not used in rejection:

US 4669113A Ash et al. Integrated network controller for a dynamic nonhierarchical routing switching network

Conclusion

6. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Salman Ahmed whose telephone number is (571)272-8307. The examiner can normally be reached on 8:30 am - 5:00 pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Hassan Kizou can be reached on (571) 272-3088. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

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Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

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SA
11/1/2006



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